

TEACHERS' RETIREMENT BOARD
INVESTMENT COMMITTEE

SUBJECT: Risk Management Study

ITEM NUMBER: 8

ATTACHMENTS: 1

ACTION: _____

DATE OF MEETING: May 1, 2002

INFORMATION: X

PRESENTER: Christopher J. Ailman

Executive Summary:

One of the Investment Division objectives for Fiscal Year '01-'02 was to commence a review of the latest risk management practices and recommend enhancements to the risk management portion of the Investment Policy & Management Plan. This item fulfills that objective by reviewing the Industry established risk management guidelines. From this review, staff will recommend enhancements to the risk statement within the CalSTRS Investment Policy.

Background:

Risk is defined in several ways by the Oxford English Dictionary, 1) as a chance of hazard or commercial loss; 2) the chance that is accepted in economic enterprise and considered the source of an entrepreneur's profit; 3) the field of risk analysis takes the judgment of experts in a particular field and translates the risk into the language of profitable and reasonable decisions. Volumes have been written on this delicate subject. A simple, correct definition of risk has been an age-old problem. Risk is highly subjective, in that even the best statistical measures are never all-inclusive. The perception of risk depends upon the "filter" of the individual involved.

The key sources of investment risk are multi dimensional and numerous, they include:

Risk of principal	Market risk	Volatility risk
Credit risk	Inflation risk	Actuary risk
Security risk	Exchange risk	Settlement risk
Interest rate risk	Portfolio risk	Operational risk
Liquidity risk	Financial risk	Industry Risk
Currency risk	World market risk	Geopolitical risk
Legal risk	Tax law risk	Fraud Risk
Reputation risk	Environmental risk	Reinvestment risk
Systematic risk	Nonsystematic risk	Future liability risk

To facilitate a comprehensive set of risk standards for the pension industry, several State Chief Investment Officers worked closely with representatives of the Association of Public Pension Fund Auditors (NPPFA) and the National Association of Retirement System Administrators (NASRA) and our very own National Council of Teacher Retirement (NCTR). These guidelines were formalized and adopted and endorsed by all three formal national organizations. A copy of the standards, *Public Pension Systems: Statement of key Investment Risks and Common Practices to Address those Risks*, has been included as attachment 1 for your review.

These standards identify the broadest, top-down, risk within a public pension's investment program. They also identify subordinate risk of decreasing magnitude. The highest-level risk for a pension plan is that assets do not support the liabilities. From this point, several lower risks are developed. Page 7, of the Statement of Key Risk, provides a diagram of the risk free facing a public pension plan. Staff has integrated the diagram into the memo to provide a clear comparison of each layer of risk. Included in each risk description is the action point taken by CalSTRS to mitigate the risk.

KEY RISK FRAMEWORK

Assets do not support Liabilities

Liabilities do not behave as expected	Annual Actuary study to closely monitor and adjust expectations of the liabilities.
Assets do not behave as expected	Broken down into External Risks and Internal Risks

In a broad sense, the asset risks can be broken into two major groups, external risks and internal risks. The external risk deals with market risk, legislation risk, and inherent investment risk.

External Asset Risk	
Market Risk (Capital markets fail to achieve expected returns)	CalSTRS has biennial Asset Allocation reviews, Long-term performance measurement against benchmarks and actuarial assumptions coupled with annual Actuarial reviews.
Legislation Risk	CalSTRS has full time staff closely monitoring all State and Federal Legislation; the Board reviews legislations every month.
Inherent Investment Risk	CalSTRS mitigates these risks through diversification and a through well designed Investment Policy.

These sources of risk are generally beyond the control of the fund. A clear investment policy and a diversified portfolio best mitigate these sources of risk. Two key components of external risk are legislative and low capital market return. The Board closely monitors all legislative activity with a monthly report in both the Investment Committee and Retirement Board meeting. To assess the risk if investment returns fall below expectations for a prolonged period, the Board will hear a presentation at the June meeting and potentially engage in a comprehensive stochastic actuarial evaluation this fall.

The primary focus of the CalSTRS risk policy should be an internal risk, which can be managed or potentially mitigated. Internal risks include strategic portfolio risks, governance risks, and implementations risks. Staff feels that a comprehensive risk statement in the CalSTRS Investment Policy and Management Plan should identify the key areas of internal risk and describe the Board's plan to mitigate these risks.

Discussion:

Listed below is a thorough discussion of each internal risk and the potential ways that CalSTRS could address these risks.

STRATEGIC RISKS

Asset allocation, active investment management, style tilts, asset allocation drifts, benchmark drifts, and benchmark selection delineate the strategic risks imbedded within the plan. The major risk of asset allocation drift is addressed within the CalSTRS Investment Policy and Management Plan. The Investment Policy clearly defines the asset classes, respective targets, the tight ranges for each asset class, and finally, last year, the Board approved a clear policy for rebalancing to deal with drifts and movement.

The risks of active management, style overweights, as well as sector and size drifts are best mitigated by clear sub-asset class guidelines, reasonable expectations, and consistent monitoring by the staff within each asset class. While all of these are in place for each asset class, they are not clearly delineated in each individual asset class policy. Staff is taking aggressive steps to better delineate our sub asset class structure targets, and process to maintain and rebalance the style and size structure in each asset segment.

One of the cutting edge processes to manage strategic risk is the concept of "risk budgeting". In a broad sense, this assumes a Fund/Board has a maximum given risk tolerance. That limit is the risk budget. From there, the Board allocates that budget among the asset classes.

Some asset classes provide a better pay off for a given level of risk. This is best illustrated by the expected out performance or alpha above a benchmark from fixed income vs. private equity. The more efficient and rapid information is disseminated within a given market, the less chance to add value. For a given increment of risk, CalSTRS expects to get a small gain in fixed income (currently 25 basis points over the index) versus a larger gain in private equity (where the target is 500 basis over the public market).

As a result, the concept of risk budgeting is indirectly incorporated in the CalSTRS asset allocation process by the choice of management styles. In the current policy, we choose to emphasize passive or enhanced index strategies in the highly efficient asset classes such as U.S. equity and fixed income. While in inefficient asset classes, such as private equity and real estate, CalSTRS deploys a pure active management strategy and assumes a high level of risk.

To bring the CalSTRS Investment Policy up to the industry best practice, staff will develop a risk budget paragraph, describing the use of various management styles, for inclusion in the 2002-2003 Plan.

Internal Risk	
Strategic Risks	
Active management	The CalSTRS investment policy has clearly defined splits for active and passive management for each asset class. Further great care is taken to select the best possible external manager. Finally staff, the external Consultant, and the Investment Committee closely track these managers.
Style Over / Under Weight	For each asset class, CalSTRS staff has set boundaries and closely monitors style tilts. Staff can re-balance managers / portfolios as needed.
Market Capitalization Over / under Weight	CalSTRS staff has set boundaries and closely monitors the equity portfolio market cap. Staff can re-balance managers / assets as needed.
Sector Over / Under Weight	For each asset class, CalSTRS staff has set boundaries and closely monitors sector weights tilts. Staff can re-balance managers / portfolios as needed. The large allocation to passive management in the equity portfolios helps balance these tilts.
Additional Asset types	CalSTRS Investment policy establishes all the asset classes. Additionally, staff and the Inv. Committee review new ideas through the tri-annual Investment Insights program.
Benchmark Misfit	CalSTRS staff and consultants are currently reviewing the major benchmarks and the underlying portfolios.
Index Selection	CalSTRS Inv. Comm. & staff are currently reviewing the major index benchmarks. Regular reviews every three years will be needed.

POOR GOVERNANCE

This involves the areas of integrity, competence, and the assignment of authority and responsibility among and between the Board and Staff. Proper Board governance, concise organizational structures, clear correlation of authority and responsibility, and most importantly a strong sense of fiduciary responsibility are the cornerstone of good governance. CalSTRS is an industry leader in the area of governance through the work done in 1997 by Cortex Consulting of Toronto Canada, which developed the current Board and staff practices. This structure incorporates clear delegation within tight parameters to staff coupled with consistent and thorough monitoring by the Investment Committee and independent external consultants. In addition, the Board Fiduciary Counsel reviews each and every Investment Committee agenda.

Competence is best addressed by clear hiring standards and a culture of continuing education. To compliment the investment staff's capabilities, the Board has retained its own top-flight external consultants. Commencing with the new Private Equity consulting RFP, this separation of

consultant duties and reporting roles will be further refined and clarified. Proper Board governance is best addressed by the Board's Governance Subcommittee, and within a Board governance policy. The upcoming Board workshop will provide an opportunity for the Board members to vet out what is defined by proper governance and expected of competencies.

To further enhance the Investment Branch's governance, the CIO has put in place added procedures for staff education and oversight. Ethics training is now an annual requirement for all members of the investment staff. The CIO has tripled the staff budget for training over the past three years. In addition, starting with calendar year 2001, every investment officer is required to complete the State Fair and Political Practices Commission Form. Within the Investment Branch and asset class policy statements, organizational structure and importantly authority and responsibility are well defined.

Internal Risk	
Poor Governance Risk	
Integrity and Ethical Values	The CalSTRS follows the State of California ethics policy and has an Insider Trading policy for the investment staff. Board and all Investment Staff complete an annual disclosure form. The Investment Staff will undertake annual ethics training. The Board has retained a Fiducially Counsel that reviews every Investment Agenda and the materials. Further all investment managers are required to disclose contributions and gifts annually
Competence	Stringent hiring practices, competency based testing, education and increased training for staff. In addition, staff and the Inv. Comm. Has extensive access to leading external Consultants.
Board of Trustees	The Board has established a Governance sub-Committee and a governance policy.
Organizational structure	The organization structure and reporting lines are clearly defined and maintained.
Assignment of Authority and Responsibility	The CalSTRS Investment Policies clearly defines delegated authority to staff.

IMPLEMENTATIONAL RISKS

These are divided between tactical market risk and more common operation implemental risk. Tactical market drifts are best mitigated by a thorough structure within the asset allocation, sub asset class, and further tight direction to individual managers. Lastly, close monitoring of all activity is critical to ensure compliance with the desired structure. At CalSTRS, this is accomplished at several levels. First, staff monitors trading activity every day. Monthly reports are submitted to the CIO by all of the internal managers, and the Investment committee receives monthly activity status reports on the total plan in the CIO report and special reports from real estate, alternative investments and credit enhancements. Semi-annually the investment performance and manager evaluations are presented to the Investment Committee by the staff and the various external consultants. Finally, annual reports and business plans are developed by each asset class and presented to the Board in July's Investment Committee meeting.

To provide further monitoring of the investment portfolio, the CalSTRS internal audit staff provides independent reviews and audits of the various programs within the Investment Branch. In addition, the CalSTRS external auditors complete a comprehensive annual audit of the entire portfolio and Fund. As an added layer of oversight, the Master Custodian is required to retain an external auditor to review and render an opinion of the accuracy of the custodian's holdings and processes. Overall CalSTRS has taken the expected and required steps to manage and mitigate operation risk. In staff review, one area that can be enhanced is the business continuity plans for short term, building specific disruptions. They will be addressed as an operation goal for 2002/2003.

Despite all the controls and monitoring, the backbone of quality implementation is the integrity and efforts of an investment staff, operation staff, and the external Custodian. Integrity cannot be legislated and written into a policy, it resides within the people involved. The senior investment staff strives to create an environment of high integrity, ethics and professional work for the Fund, Board and the teachers of the State of California.

Internal Risk	
Implementation Risks	
Tactical	
Portfolio Drift	CalSTRS has a tight policy for portfolio drift at the asset class level and sub-asset class level. Portfolio drift is monitored monthly and daily as needed. A re-balancing decision is triggered when the tight ranges are exceeded.
Under performance	The Investment Committee, staff, and external consultants closely monitor performance at the Fund, asset class, sub-asset class, and manager level. Underperformance at any level is closely tracked and discussed. Action is taken as appropriate.
Operational	
External managers	Internal and external managers have tight guidelines and submit monthly reports. All managers are closely monitored in each asset class. Deviation from written guidelines are noted and addressed.
Custodian banks	Legal custody of the assets is help by the industry leading external custodian. The State Controller's office monitors all activity. Trades are delivery vs. payment with documented exceptions. Daily and monthly reconciliation's by CalSTRS staff and the custodian are completed in a timely basis. Lastly, the Custodian submits to an annual external audit of its operations for CalSTRS.
Internal Operations	CalSTRS is fortunate to have one of the best internal operations staffs in the country. The staff has extensive desk manuals and clear separation of duties.
Internal Asset management	Internal asset management is treated just like external manager. They are required to produce monthly reports for the CIO and the CIO and external equity staff monitor compliance. There is a clean separation of duties with operations. Both fixed Income and the in-house equity are subject to internal audits.

Internal Operations (continued)	
Cash management	The operations staff and custodian as well as the State Treasurer's office closely monitor and manage cash movement.
Operating Systems	As stated above, there is a clear separation of trading and accounting as well as authority to execute trades. The investment staff holds a tri-annual meeting with the Custodian to maintain a close working relationship. The accounting systems are utilized by other large pension plans. Business continuity plans are in place to handle long-term disruption and emergencies. Additional enhancements to the plan will be made.

SUMMARY

After a through review of all of the latest risk standards, staff feels that CalSTRS has addressed many of the risks identified in the APPFA / NASRA / NCTR risk standards. However, some of these standards and mitigation plans are not been clearly delineated in one location within the Investment policy. To complete the loop, staff will present and move the comprehensive risk management policy for inclusion to the CalSTRS Investment Policy and Management Plan for 2002/2003.

Resources:

Pension Fund Excellence, Keith P. Ambachtsheer & D. Don Ezra

Investing with the Best, Claude N. Rosenberg Jr.

Investment Analysis and portfolio management, Cohen, Zinberg, Zeikel

The Psychologies of Risk, Lynn Brenner

Alpha, The Positive Side of Risk, Investors Press

One up on Wall Street, Peter Lynch

Risk analysis & monitoring, Goldman Sachs

Optimal active risk budget, Goldman Sachs Investment management Research

Risk Policy, Pension Fund Association for Local Government Officer (PAL) of Japan

Risk monitoring, BlackRock Solutions

Standard Deviations, Ferrell Capital Management

Risk measurement, Measurisk.com

Reduction of risk, Ibbotson Associates

Various papers by Dr. William Sharpe, Stanford University